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FISHES.—Prof. C. Gilbert has an important paper on rare and little-known etheostomine Percidæ in the "Proceeds. of the U. S. National Museum." Several new species from Southwestern rivers are described.

Prof. A. Heilprin describes, in a very imperfect manner, a catfish which he supposes to be new, from Lake Okeechobee, Florida. It is a pity that Professor Heilprin did not, in his description, imitate some of the numerous good descriptions to be found in American ichthyological literature.

Dr. G. A. Boulenger has recently described some new species of fishes from the Congo.

BATRACHIA AND REPTILIA.—Dr. G. A. Boulenger has published, in the *Annals and Magazine of Natural History*, a list of the species from the department of Rio Grande do Sul of Brazil. He enumerates: Testudinata, 6; Crocodilia, 1; Lacertilia, 14; Ophidia, 42; Batrachia anura, 27; do. Urodela cæciliidæ, 1. Total, 63 Reptilia, 28 Batrachia.

Professor Cope describes, in the "Proceedings of the U. S. National Museum," a new species of water-snake, of the genus *Tropidonotus*, allied to the *T. woodhousei*, which he calls *T. bisectus*. It is only known from a specimen which was killed in the grounds of the armory, near the National Museum, in the city of Washington, D. C.

Dr. G. A. Boulenger has distinguished two species of the genus *Bombinator* in Europe. The *B. bombina* Linn. is yellow below, has closely-placed dermal tubercles, etc., and inhabits high ground. The *B. igneus* Linn. inhabits lower levels, and is black below, with large crimson splotches, and has the dermal tubercles sparse, etc.

EMBRYOLOGY.*

The Embryology of the Monotremata and Marsupialia.—In *Nature* for March 31, 1887, the following abstract is given of the first part of a memoir by W. H. Caldwell, with the above title, which was presented at the meeting of the Royal Society held on March 17 last. Deeming the subject one of unusual interest, the author's abstract is here given in full:

"(1) *The Egg-Membranes*.—In Monotremata, in very young ova, a fine membrane exists between the single row of follicular cells and the substance of the ovum. This membrane, which I will call *the vitelline membrane*, at first increases in thickness with the growth of the ovum, and through it pass numerous fine protoplasmic processes connecting the protoplasm of the follicular cells with that of the ovum, and serving to conduct food-granules, which, appearing in the neighborhood of the nuclei of the cells,

* Edited by Prof. JOHN A. RYDER, Biological Department, University of Pennsylvania, Philadelphia.

travel thence to the ovum; food-granules also appear in the neighborhood of the germinal vesicle, and travel away from it; hence the horseshoe-shape of the yelk-mass as seen in section.

"The time during which food-granules are thus passing from the follicular cells to the ovum may be called 'the yelk-forming period.'

"It is succeeded by a period during which the vitelline membrane again becomes thin, the follicular cells are reduced to a single layer, and the cells are very thin and flat. This period may be called 'the absorption-of-fluid period,' since during it the ovum absorbs large quantities of fluid through the thin vitelline membrane and single layer of thin follicular cells, and thereby increases largely in size.

"This is in turn succeeded by a third period, during which the follicular cells again become active, multiply, increase greatly in size, and give rise, between themselves and the vitelline membrane, to a deeply-staining homogeneous layer, which I will call the *chorion*. This period may be called 'the chorion-forming period.' All these three periods are gone through while the ovum is still in the follicle.

"Upon the bursting of the follicle and the reception of the ovum in the Fallopian tube, a few of the follicular cells remain attached to the chorion; the majority are left behind within the burst follicle.

"During the passage along the Fallopian tube the vitelline membrane again increases in thickness, and the chorion, also increasing in thickness, absorbs fluid and becomes the *albumen layer*. Outside this now appears a new structure, the *shell* or shell-membrane, of tough, parchment-like consistency,² not staining with reagents. I have not yet traced the deposition of the shell to the activity of any special glands; but I can say that the shell-membrane does not increase at the expense of the chorion or albumen layer.

"After reaching the uterus both vitelline membrane and shell-membrane increase in thickness, but the albumen diminishes and disappears, serving, apparently, for the nutrition of the ovum. Immediately beneath the vitelline membrane a new layer is now seen in hardened preparations; but it may be shown that this layer is really fluid, yielding a coagulum which stains deeply with reagents, the fluid being apparently derived, through the membranes, from the uterine glands.

"In Marsupialia the history of the vitelline membrane, save that 'the yelk-forming period' is not marked off from the 'absorption-of-fluid' period, is similar to that in Monotremata. I have not been able to trace the beginning of the 'chorion' while the ovum is still in the ovary in Marsupialia; but in an ovum of

² "In the laid egg of *Echidna* I have not detected calcic salts, but that of *Ornithorhynchus* gives rise to gas when treated with dilute acid."

Phascolarctos from the uterus I found a chorion like that of Monotremata, and surrounded, moreover, by a thin, transparent membrane,—a *shell-membrane*. Within the uterus the chorion, increasing in thickness, becomes transformed into an albumen layer, and is eventually absorbed, passing through the vitelline membrane to nourish the ovum, so that eventually the vitelline membrane comes to be close to the shell.

“As in Monotremata, a coagulable, and, when coagulated, deeply-staining fluid makes its appearance between the vitelline membrane and ovum (blastoderm).

“The shell-membrane persists until the developing ovum becomes fixed to the walls of the uterus, after which it disappears.”

The paper then compares the egg-membranes just described with those of Placentalia and those of Vertebrata generally.

“(2) *Segmentation*.—The telolecithal ova of Monotremata and Marsupialia go through a partial segmentation. The ova of Placentalia segment completely, but the resulting blastodermic vesicle is identical with that produced by partial segmentation in Monotremata and Marsupialia.

“*In Monotremata* there is a posterior lip to the blastopore similar to that of Elasmobranchii. The epiblast grows in so rapidly from the sides that a primitive-streak region is formed in front of the posterior lip long before the epiblast has enclosed the yolk. This unenclosed area in front of the primitive streak probably includes a region where the hypoblast (yolk) has secondarily broken through the epiblast. The existence of such a region would hide the position of the anterior lip of the blastopore. The circumference of the circle made up by the larger arc of the edge of the blastoderm on the yolk, and the smaller arc of the posterior lip of the blastopore, is a measure of the quantity of yolk in a meroblastic ovum.

“*In Marsupialia* the epiblastic growth encloses the hypoblast at a very early age, except over a very narrow slit in front of the posterior lip of the blastopore. This slit corresponds to the area enclosed by the circle described above in a meroblastic egg. The primitive streak is not conspicuous at an early age because of the large size of the cells. No hypoblast projects through the epiblast in front of the primitive-streak region. I would explain the segmentation and the gastrula of Placentalia in the same way. Balfour's objection ('Comp. Embryol.,' vol. ii. p. 187) to Van Beneden's original comparison of the blastopore of the rabbit with that of a frog is explained away by the presence of a posterior lip to the blastopore in Marsupialia. My explanation postulates the existence of a similar structure in the rabbit. The blastopore of the rabbit corresponds, therefore, to the whole area marked out by the growing epiblast and the posterior lip of the blastopore, before the closing of the primitive-streak region, or

to this area minus the secondary extension, caused by the projecting yelk in the Monotremata."

[Selenka, in his recently-published memoir¹ on the development of the opossum (*Didelphys virginiana*), has shown that there remains but little doubt respecting the homology of Van Beneden's blastopore with the blastopores of Marsipobranchii, Amphibia, Elasmobranchs, Aves, and Reptilia. It is also interesting to note that he does not find that any part of the ectoblast is converted, in the blastodermic vesicle of the opossum, into the transitory *Reichert'sche Deckschicht*, as in the blastodermic vesicles of Rodentia generally. He also shows that the segmentation is very distinctly meroblastic at first, and therefore unlike that of the ova of Placentalia, and that the blastosphere finally includes more or less non-nucleated yelk-material, while the peripheral epiblast, at certain points on the blastodermic vesicle, becomes thickened and efficient in taking up the albumen which lies between the inner face of the zona pellucida and the external zona or granulosa-membrane.—ED.]

SCIENTIFIC NEWS.

—The British Association for the Advancement of Science will hold its fifty-seventh meeting at Manchester the week commencing Wednesday, August 31, 1887, under the presidency of the eminent chemist, Sir Henry E. Roscoe. The local committee is very desirous of giving to this meeting an international character, and to this end have sent invitations to large numbers of scientific gentlemen both on the continent and in America. It is desirable that all intending to be present should inform the local committee (38 Barton Arcade, Manchester, England) at an early date, so that the necessary arrangements may be made.

—The American Association for the Advancement of Science will meet this year in New York City. The meeting will begin August 10 and continue one week. This is the first time that a meeting has been held in New York, and a large attendance is expected. Arrangements have been made by which the various sessions will be held in the buildings of Columbia College. The retiring president, Professor E. S. Morse, of Salem, Mass., gives the presidential address, and the meeting will be presided over by the incoming president, Professor S. P. Langley, of Alleghany City, Pa. A local committee will be appointed, which will make

¹ Studien über Entwicklungsgeschichte der Thiere. 4tes Heft, 4to. Wiesbaden, 1886.